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The Game Archives Project

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THE GAME ARCHIVES PROJECTS

An Interactive Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by



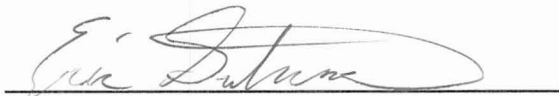
Brandon Germain

Date: April 24, 2006



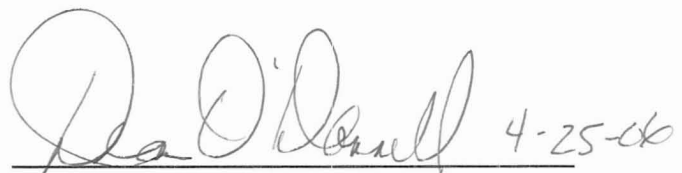
Montana Foertsch

Date: April 24, 2006



Eric Sutman

Date: April 24, 2006

 4-25-06

Professor Dean O'Donnell, Major Advisor

ABSTRACT

We have created an archive of video games and related materials, located in the Gordon Library, that represent influential examples of work in our time. The purpose of the archives is to preserve the history of games and serve as a valuable teaching tool for the growing IMGD student body.

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Introduction

Since the beginning of A-Term 2005, we have been working together to create an archive of games that can represent all the fine examples of electronic media up to present date. However, these standards are not set in stone. Who's to say what is right and what is wrong? What qualifies as a good game? Poor quality games can be just as useful in the archives since they illustrate to our future developers what to avoid when making your own games. Under the influence of other collections such as the Cabrinity Collection at Stanford University, we were able to set guidelines for creating the archive.

As a group effort, we proceeded to collect items in order to fill in the archive whose rules we set after a full term of debating. We tried multiple forms of advertising, designing visually appealing posters which would draw in people with similar interests in hopes of obtaining their old game cartridges and other assorted items. In addition, we personally contributed to the collection and pursued additional items in conjunction with those previously donated in order to achieve a sense of completion.

Finally, with the base collection of the archive established, the preservation and accessibility of our collection was at hand. We researched the issues behind intellectual property and discovered what was necessary to properly make digital backups that could then be used on computer terminals. This would preserve the original media and allow the student body to play using emulators on specially designed computer setups. Also, future IQPs can further the growth of the archive beyond what we have accomplished.

The WPI Archives and Special Games Collection

What the Archives Represent

The WPI Archives and Special Games Collection, a subdivision of the George C. Gordon library, represents a large collective of electronic entertainment and related paraphernalia that have been deemed a profitable resource of knowledge on behalf of the future game developers here on campus. Once the material has been obtained, it is then brought to Gordon Library for preservation purposes and to be made available for the entire student body and faculty.

What Belongs in the Archive?

As an archive, we anticipate having a complete library of resources and related material. That is why we collected the games along with all the supplemental components that helped to forge them into reality, including but not limited to all additional elements that allowed them to represent fine examples of their time. The list goes as followed:

- Computers / Consoles
- Input devices
- Cheat devices
- Strategy Guides, Maps, and Manuals

We are also making efforts to collect ephemera related to games such as action figures to prove that select games were culturally successful. Respectively, they create

an impression of the culture that has developed around video games since their initial creation.

Our top priority is to collect as many design documents as possible. A design document describes how a game is implemented, its mechanics, story, etc – constantly evolving throughout the development phase of a game's life. Therefore, it represents the thought process that was involved bringing the game into existence, and the stages of development required to build the final product. We determined that it would become the most important teaching device used in the archive.

Why we are looking for them

We acknowledge that electronic data has a limited life span and that usage of these items will cause physical deterioration overtime. Therefore, it is our duty to prevent the loss of data by backing up and providing good storage of the media collected in hopes that it will survive to be accessed and viewed for many years to come; future generations of game creators can benefit from the experience of previous developers.

Communication and Multiple Groups

The Reason for Multiple Groups

Establishing proper communication was the first step in organizing our IQP group. When our IQP for the Special Games Archive first began, we were a collective of six individuals, which is double the normal IQP group size. As such, it was important that everyone had access to all information and be properly informed of meeting times, changes, etc and was available for contacting, not only for our sake, but the advisors as well. Therefore, it was in agreement that communication was the most valuable resource we have to successfully conduct a group effort. However, everyone's schedules varied tremendously, so getting all six people to be available simultaneously to work on a project was rather difficult. We had two different advisors who wished the six of us to break apart into separate groups in the later stages of the project. Breaking up into two groups also helped reduce time constraints on the group, it was far easier for smaller groups to meet then it was for all six of us plus our advisors to get together. We had the intention of subdividing later on in the term based on related tasks, such as game collection and ephemera collection, once the project was well under way.

Email System

Communication was an essential part of having multiple groups. Everyone had their own separate schedules to follow, and it was not always possible for people to meet in person. Therefore, we decided that digital communication in combination with efforts to meet in person would fill this gap. As a result, an email system was established to

communicate with each other. That way, if someone was not available to receive the message at the time it was sent, they would have a record of it and their digital copy would be waiting for them whenever they returned. This also gives us the capability to exchange and leave files appropriate to the tasks at hand and other relevant material.

Mailing Lists

The core of the email system is the mailing list. The mailing lists consist of sub-divisions which include the advisors, groups, the groups as a whole, and everyone as a whole. This way, the information is sent only to the appropriately involved parties. Game-archives was for donation emails from other people, overall group meeting arrangements, and agenda's for meetings. Gamearchive-all was for inter group communication such as requesting information. The third and fourth groups, gamearchive 1 and 2 were for the small groups of three to communicate task list information, and collected research.

The sub-divisions are as followed:

- 1) game-archives@wpi.edu
 - a. Everyone, including professors, is included in this mailing list.
- 2) gamearchive-all@wpi.edu
 - a. Everyone, excluding professors, is included in this mailing list.
- 3) gamearchive-1@wpi.edu
 - a. nikki@wpi.edu - Nikki Beneke

- b. fsmunky@gmail.com - Brendan Perry
- c. marnold@wpi.edu - Matthew Arnold
- 4) gamearchive-2@wpi.edu
 - a. bgermain@wpi.edu - Brandon Germain
 - b. esutman@wpi.edu - Eric Sutman
 - c. suntzu@wpi.edu - Montana Foertsch

Milestones / Planning

Throughout the IQP process, we established goals to be met for each term, in an effort to keep ourselves on schedule and make sure that the archive was being properly planned out. Organization was the key to our success.

Term based goals

A-term was reserved for general planning and organizing our priorities. We established a communication system to exchange ideas and efforts. Through this, we were able to create a mission statement with an underlying scope. Then, in order to enforce the scope, we created a tier system that would identify the priority of items the IQP would be seeking on behalf of the archives. This would lead us into B-term, with the foundations established for building the archive. However, we needed to focus on the preparations required before we could begin active collecting. Therefore, we decided that for the course of B-term, we were going to investigate intellectual property rights, and so the other group interviewed the curator of Stanford's video game collection, which lead

up to the advertisement stage for the archives. In C-term upon we started actively collecting, and donations started to appear thanks to our advertising efforts from the previous term.

Time Management

Each week, both groups and advisors met for one hour on the day that fit everyone's schedule. Beyond that, each individual group was expected to meet regularly to achieve the assigned goals due prior to the next week's meeting. Our group accomplished this by meeting an additional two times each week, Sunday and Wednesday respectively with times varying for an hour span. This way, we could work safely without time constraints on days when classes did not take place.

The Lowood/Stanford Collection

What is the Stanford Collection?

The Stephen M. Cabrinety Collection is an archive of related video games and hardware similar to the collection we are trying to establish in the George C. Gordon Library here at WPI. That is why we decided it would be in our best interest to have a talk with Henry Lowood and ask him questions pertaining to the maintenance and expansion of the Cabrinety collection.

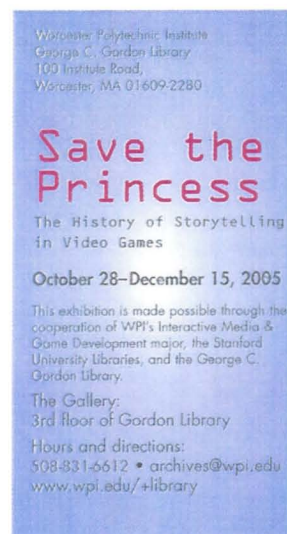
Significance of the Stanford Collection

The Stanford Collection contains thousands of various software and hardware, including hundreds of well known video game titles, and makes them available to the Stanford student body. In fact, it represents one of the most successful video game archives in existence. While we are largely interested in imitating the success of Stanford collection, it only focuses on having the item in its collection versus preserving the games they've obtained. In addition, the majority of the Stanford Collection focuses on early videogames as they rose in popularity during the 1980s and 1990s, rather than the entire spectrum of game history and culture as a whole.

Influence on Save The Princess

We have modeled our collection to closely resemble the collection at Stanford University, the Stephen M. Cabrinety Collection in the History of Microcomputing. This collection has been an inspiration for beginning our own WPI Special Games Archive, as

a direct result of the "Save the Princess" Exhibit IQP from 2004-2005. The "Save the Princess" exhibit, which documented the history of storytelling in games, contained a large number of items from the Cabrinety Collection. "Save the Princess" was a previous IQP whose purpose was designing an exhibit at the Gordon Library to illustrate the history of storytelling in games. The display was active from the beginning of B-term until Christmas break, which was when we were in our advertising and collecting phase of the project.



"Save The Princess" Postcard Image, front and back respectively

Who is Lowood?

Henry Lowood is the active curator for both the History of Science & Technology Collections and Germanic Collections at Stanford University. He is also the current acting curator of the Stephen M. Cabrinety collection, which is perhaps the largest collection of gaming media software and hardware held by any research library or archive.¹ Stephen M. Cabrinety was the original founder of the archive and also created the Computer Discovery Center in 1992. This center happened to contain a software archive which dates all the way back to 1970, which eventually became the “Stephen M. Cabrinety Collection of the History of Microcomputing” we know today.² Unfortunately, Stephen Cabrinety died in 1995. However, Henry Lowood assumed the role of the curator for the Cabrinety Collection and has since then made expansions to it, and actively maintains it.

Communication with Lowood

After some deliberation during our early meetings in A-term, our advisors suggested that we make arrangements for a conference call with Lowood. The other group made contact around the same time asking Lowood for a conference call to talk with him about the Cabrinety collection. E-mails continued to move back and forth into B-term requesting possible times we could hold the conference call. Unfortunately, we

¹ Wizards of OS, Wizard of OS: Henry Lowood, available from <http://wizards-of-os.org/index.php?id=840>; Internet; accessed March, 2006.

² Stanford University, SM Cabrienety Biography [sic], available from <http://www-sul.stanford.edu/depts/hasrg/histsci/SMCbiography.htm/>; Internet; accessed March, 2006.

were unable to get a time that worked for all involved parties until the end of B-term.

Regardless, Lowood provided us with a lot of useful information that could be refined for the creation process of our own collection. Topics included:

- Donations
 - o *What we should/should not accept.*
- Preservation
 - o *Prolonging the life of our collection.*
- Legal issues
 - o *Liability with regards to I.P.*
- Usage of materials
 - o *How to create interactive setups for play/use.*
- Security of the Collection
 - o *How to protect data/material possessions.*
- Storage Constraints
 - o *Reducing the space required to store the collection*
- Minimizing sound
 - o *How to keep interactive terminals library friendly.*

Making the Tier System

The Significance of Tier Systems

The main focus behind our organization is that this archive is meant to be a 'Special Collection', meaning that it's not just a box of baseball cards, or chewing gum wrappers. Not all games would deserve to have a place in our collection. We also needed to be specific about what it was that we wanted to collect so that we wouldn't be finding ourselves running in circles. Therefore, a tier system was created to prioritize and list what we going to pursue ourselves, in addition to what we would accept from outside sources.

Why we made it

Beside organizational purposes, the fact remains that there is a limited amount of space that can be accounted for in the storing and maintaining of the completed archive. That is why it is very important to know which items are important to us, and prioritize them based on their significance and influence, keeping our focus with the mission statement.

Initial Game List Failure

In the initial stages of development, we decided that the tier should focus more on the software and hardware aspect of the game spectrum. With this in mind we sat down and collected our thoughts, generating a fairly sizeable list of items that we thought were worthy enough to be included in the WPI Special Games Archives (see Appendix A).

However, during the creation of this list, it became obvious that the items entailed vary greatly from console to console, complimented by the fact that the list was simply too broad to begin with. Without a central focus, our thoughts for the importance of these items went in separate directions. Therefore, we ultimately decided that if we took the ideals behind what made our choices so obvious, then we would have a schematic for choosing what items truly belonged. This became the driving force behind the final tier that was soon to follow.

The Established Tier/Priority System

After an unsuccessful attempt to produce a list of games that would represent our collection, we took the ideals behind making those selections to determine the attributes items must have. These were further divided into separate tiers in order to signify the priority of items based on their sub level:

Tier 1:

Materials in this tier merit active pursuit, based on their exceptional characteristics. Qualifying items are exceptional in one or more of these categories:

- Fame/Infamy:

The media frequently points at the item as an example of some quality. Games often referred to as the “best” or the “worst of a genre fall under this heading.

- *Age:*

The item is at least twenty years old.

- *Rarity:*

The item is difficult or impossible to obtain through normal channels.

Consoles that are no longer manufactured and limited edition games fall under this heading.

- *Quality:*

The item is of high quality, as evidenced by a wealth of positive reviews or awards.

- *Uniqueness:*

This item represents an idea that has never been implemented again, or which had never been implemented prior to this item's implementation.

Innovative games and input devices fall under this heading.

Tier 2:

Materials in this tier do not merit active pursuit. In the event that these items are donated, we will accept them. We will also purchase items if they are packaged with first tier items. Qualifying items for this tier are limited to games, consoles, and input devices.

Tier 3:

Materials in this tier are designed to provide assistance to people using the items in the upper tiers. Such items include:

Strategy Guides

Maps

Cheat Codes

Game Sharks/Game Genies

Tier 4:

Materials in this tier do not necessarily serve a functional purpose. These items are part of the collection because they add to the atmosphere of the archive and provide insight into video game culture. Items in this tier include video game related ephemera such as action figures, posters, DVDs, comic books, and toys.

Mike Manning/IP Issues

What is I.P?

Intellectual Property is the instance of a non physical item that usually pertains to the concepts and creative capacity behind the being of an actual product. These things are commonly referred to as “trade secrets”, or the ways in which a company or item works. Copyright, meaning the “right to copy”, permits only the individual or body that owns the IP to produce and sell this item in their desired tangible form. Also, the owner of the Intellectual Property may sell the IP as if it were a tangible possession, which forfeits all rights over to the new owner upon purchase.

Problems

Intellectual Property has always been an issue since everyone was afraid of having their work “stolen”. In fact, “Until 1996 there was no federal statute that explicitly criminalized the theft of commercial trade secrets.”³ Nowadays, theft of any kind is considered a crime and subject to criminal punishment (Appendix B). Also, the act of misleading consumers to think the products they are purchasing are that of another company infringes on that company’s trademark. Examples include:

- Similar logos, fonts, and color schemes

³ U.S. Government, Intellectual Property Crimes: VIII. Theft of Commercial Trade Secrets, 23 April, 2001, available from <http://www.cybercrime.gov/ipmanual/08ipma.htm/>; Internet; accessed March, 2006.

- Product shape (of unique value)
- Likeness of characters

Why IP was an issue

We have been experiencing conflicts with Intellectual Property throughout the developmental stage of the Special Collections Archive. As such, these conflicts have interfered with our requests to various companies for potential donations. Now an actual game is a fine example of excellent work and proper design; however, it only represents the final stage. We want to have the materials that build up to that final stage, especially for the development and implementation stages. Therefore, the list of requested items included source code, design documents, betas, and other related materials that serve not only as a teaching tool, but would help establish a sense of completeness in our collection. Unfortunately, companies do not seem to share our point of view. They have to consider that if they were to reveal, or donate in this case, source code or design documents to us – it could potentially expose secrets that the company would prefer not to be seen. Also, they would not be protected if the code was potentially translated into something else, given that the new spawn does not conflict with other copyrights and trademarks that company owns.

The other obstacle Intellectual Property imposes is the liability behind making backups of games. Our intention is to preserve the data and prolong the original cartridge's lifespan. Unfortunately, piracy is a big issue and companies do not seem to share our point of view, and do not hesitate to bring a lawsuit against WPI if they

believed there was any form of copyright infringement or intellectual property theft. As such, it is our job is to complete our task carefully to avoid confusion with regards to liability and protect both WPI's funds and reputation.

ROMs

ROM stands for 'Read Only Memory', and is commonly referred to and known as the electronic image of a game cartridge backed up onto a computer. As the translation of the acronym stands, it's a file that can only be read from and not edited for legal purposes. The reason that ROMs of games have been an issue is that people were making these images and distributing them over the internet for use on emulators that, as the name implies, emulate the hardware and the games by reading the data from the ROM's contents. Naturally, companies frown upon this because they are losing sales on both the hardware and games to consumers where the emulators and ROMs are being made available for. The general idea is that if someone does not purchase something, they should not be able to use it. Also, just because you have a copy of the game does not mean you can legally possess a ROM of that cartridge. Images downloaded from the internet are an image of someone else's game, not yours. This is essentially stealing because it's a second copy that you do not legally own. In order to legally possess a ROM you must have proof that the image is in fact a copy of your original product.

Making ROM Images

In order to back up an image of a game cartridge, we must be able to read the media as if it were any other media device such as a CD or floppy diskette. After some

extensive research, we found out that early piracy used special drives that utilized the cartridge slot to feed the data to a 3 ½" floppy. Since 3 ½ floppy drives are still accessible today, these tools could be used to make our own images of the cartridges we own, thus producing legal images. We would then be able to use these on an emulator for display and interactive setups. Also, since using the actual cartridges the most damaging thing you can do with them, playing them on emulators allows us to minimize this and prolong the life of the media

Our first purchase was from Family Game⁴, for a "Game Doctor SF6 (Professor SF1)" that allows us to make images of SNES cartridges. Once the cartridge is inserted, it can be powered by AC adapter or the SNES system. It then projects an image of the cartridge onto a 3 ½" floppy or can load an image to play off a floppy if its connected to the SNES. This monster cost \$103.73 after shipping from the UK. Brandon Germain forwarded the initial cost, which was then reimbursed by Professor Finkel and donated on behalf of the archives.



Game DoctorSF6 (Professor SF1) - SNES Backup Device

⁴ Rob Webb, Rob Webb - Gameboy Xchanger - Sega Saturn - SNES - Bung - Modchip-
[www.robwebb.clara.co.uk/shop](http://www.lib.duke.edu/libguide/cite/Turabian.htm), available from <http://www.lib.duke.edu/libguide/cite/Turabian.htm>;
Internet; accessed March, 2003.

We plan to obtain more devices like this as they become available for other consoles.

Finding the Director of I.P.

Mike Manning is the Director of IP at Worcester Polytechnic Institute, located in his office on the first floor of Higgins Lab. Unfortunately, we did not always know this and spent most of B-term trying to figure out whom exactly the director of I.P. was, never mind where he was. What was surprising is that every administrator we talked to hadn't the slightest clue, until someone claimed that Chuck Kornick was in fact, responsible for I.P. handlings regarding WPI. We paid him a visit only to finally be directed to the official IPO, Mike Manning. Who would've thought that his office would be located on the first floor of Higgins Lab, the center of mechanical engineering work? That must've been why nobody else knew where to find him.

Dispensed Knowledge

We questioned him about the use of ROMs in our collection, and the legality of allowing large numbers of people access to a single or several copies of a game. He responded that giving a large number of people access was not an issue, as it falls under the fair use policy of United States copyright law. The fair use policy allows use of copyrighted material to stimulate creativity for the enrichment of the public. This is the same law that allows the copying of pages of a book at a library. Mike Manning also talked about the creation and use of ROMs. Since the information on the hardware was

what we intended to copy, and not the actual physical objects, we would be free to remove the information from the product. The hardware was purchased with the intention of using information stored on it, and whether that information was accessed from the hardware or copied and then used, made no difference legally. As long as we kept a one to one relationship between the hardware and software copy, such that we could not have multiple copies of a game running, it would be legal. Even though it is ok to use software images of games rather than the hardware to access them, we still need to make those images ourselves. Obtaining a copy from another source is illegal as stated before, since the owner of a hardware copy is licensing the use of that specific copy and no other.

Working with I.P. restrictions

Following these guidelines, the archive had several possibilities available for public use and preservation. Games and consoles could be used without any backup, allowing the original experience of games and hardware the way they were intended. However, this would not preserve any of the hardware that the games are stored on, which would decay rapidly due to frequent use. Another option available to us is the acquisition of ROM creation devices, and the archive could make all of its own copies legally. These would be stored on a central server that would preserve the media as long as the hard drives don't fail. However, there are several downsides to this method. The original experience of playing it on the system it was designed for is lost. In addition, some of the hardware for making these software images is expensive, and also very hard to find. The equipment was popular in the heyday of the system but for older consoles, there are not many copies of this equipment. Finally, some software does not run well or

at all on current day computers, therefore storing this data would not do any good if it cannot be used.

A new possibility that recently became available was an online game service called Gametap which allow a user access to any game of the online collection for a monthly subscription fee, and it is a legal service. This is only possible for them because they are paying royalties to all the IP owners and have permission because of this. The upside is that the online game service may have a larger collection, in other words, items that the archive may be missing. However, these games would not be tangible for borrowing by the public, as making copies of any of these games would be breaking the fair use policy. Were we to use the service, we would need to pay a monthly fee for each computer in the library that was set up to use this service. If we had our own images of two items, then we could still play them at the same time, whereas we'd need two subscriptions for two instances of the same item to be played simultaneously. This would not financially accommodate a large demand by the student body and doesn't help us in preserving the actual media. Also, any changes to their service would directly affect us.

After considering all options, we submitted a letter of intent to the director of I.P. (Appendix C).

What is GameTap?

“GameTap is like having all the greatest game consoles ever wired right into your PC: it's an application built to play games across multiple platforms and systems. It sounds all super high-tech, but all you need to know is... it rocks. Console games, PC games, even arcade games. GameTap plays them all; the original games – not cheap

knockoffs – sized full-screen to fit your monitor. Download GameTap to your broadband PC, launch, and play. You'll access the games right from your desktop. No consoles, no cartridges... and no tokens. Your USB controllers will work fine, but aren't necessary: keyboard and mouse support is built right in.”⁵

To run the GameTap application, our computer terminal setup will need to meet the following minimum requirements:

- Internet Connection:
 - Broadband service: DSL, DSL light, or cable modem (minimum 384k)
- Hardware, Software, and Other Requirements:
 - Windows 2000/XP
 - Pentium III or AMD Athlon 800MHz or better
 - 256MB RAM
 - 5GB available storage (for application)
 - Video Card: 3D-capable video card with 32MB VRAM or greater
 - DirectX 8.X and OpenGL 1.1

Also, the fee for using the GameTap service is \$9.95 per month.

⁵ GameTap, GameTap – Expand Your Playground, available from <http://www.gametap.com/>; Internet; accessed March 2006.

Dividing into Separate Groups

Responsibilities of Groups

Since the design documents are an entity of their own, in addition to the fact that they were on the top of our priority list and could not simply be purchased, each team was responsible for pursuing these items. Beyond these, the range of items we were trying to collect was too broad and would not be evenly collected if we did not divide our efforts in collecting certain items equally. This occurred about mid B-term.

Dividing the Responsibilities

The two areas of interest lay between the actual games themselves and the cultural impact they had, including the ephemera that followed or accompanied a game's release. This standpoint is where we determined the actual division of responsibilities should occur, given that a group's responsibilities should not lose focus of the collection as a whole. A group may still make contributions that aren't specific to their individual goals. Therefore, in the event that items are available to one group, but they fall under the jurisdiction of the other team, the involved parties should make an attempt to produce this item for the sake of the archive.

How the divisions were determined

After some discussion, our teams were assigned to areas each felt the most comfortable with, or had the easiest access to. As such, our group felt very comfortable with the history of video games, and knew which peripherals and media were the most influential of their time. This was approved and confirmed by our advisors who accepted the divisions we had chosen.

Collecting the Stuff

Our Group Tasks

After the divisions were made, our group was responsible for the collecting of both design documents and the various media that spawned as a result. In order to maximize the amount of items we would receive, we needed to fully expose ourselves to the interest of the student body. Therefore, we would need to prioritize our search in top tier items while making advertising efforts to bring in various items that are only limited by the generosity of outside parties.

Description of each task

The description and tasks at hand are as followed:

- *Collect Design Documents:*
 - In order to obtain these, we planed to email companies that may have old paperwork, or electronic documents filed away we could relieve them of.
- *Procuring the Means to make ROM images:*
 - Since the devices to do this are not commercially accepted, these have been limited to availability and will most likely be purchased online.
- *Create Flyers/Posters to Distribute on Campus:*
 - Using a utility program like Adobe Photoshop, we can create an informative and visually appealing flyer to draw public interest.
- *Place an article in Tech News*
 - Readers of Tech News, our school newspaper, will be able to read in detail our intentions and desires.

- *Fill gaping holes in the Collection*
 - o After an amount of time has passed during the advertising stage, we will review the current standings of the archives inventory, and purchase items to make complete sets regarding items already received. This task was never attempted as we had run out of time for the project before we could start.

Personal Donations

Although we are depending on the contribution of outside resources – we have also made personal donations towards the success of the collection. Our personal contributions are listed as followed:

Donated by Brandon Germain

- Nintendo Power Glove
- Sega CD
- Robotic Operating Buddy (ROB) for Nintendo
- Socrates Educational Video System and Touch Pad
- Power Pad for Nintendo
- (2) Batter Up Controllers for Nintendo
- Transfer Pak for Nintendo 64
- (2) Zapper Controllers for Nintendo
- Sega Genesis 16-bit with controllers and accessories
- Nintendo Entertainment System (NES) with controllers and accessories
- Genesis 32x cartridge adaptor
- Manuals for Socrates Education Video System
- Manual for Sega CD
- Manual for XBox
- Manual for ROB
- Manual for Super Mario Bros. 2 for Nintendo
- Manual for Metriod for Nintendo
- Manual for City Connection for Nintendo
- Manual for Mario Bros. for Nintendo
- (2) Manuals for Super Mario Bros. 3 for Nintendo
- Manual for Zelda II: The Adventure of Link for Nintendo
- Manual for Castlevania for Nintendo
- Manual for Duck Hunt and Super Mario Bros. for Nintendo
- Manual for Diablo II for PC
- Manual for Sonic CD

- Book, Diablo II - Ultimate Strategy Guide, by Bart G. Farkas, 2001
- Book, Star Craft - Brood War, Expansion Set, by Bart Farkas, 1998
- Book, Final Fantasy VII, Official Strategy Guide, by David Cassady, 1999
- Book, Metal Gear Solid 2, Sons of Liberty, Official Strategy Guide, by Dan Birlew, 2002
- Cartridge, Numbers, Shapes & Letters- Touch Pad, for Socrates
- Cartridge, Tyrants for Sega Genesis
- Cartridge, Sonic 2 for Sega Genesis
- Cartridge, Shining Force II for Sega Genesis
- Cartridge, Comix Zone for Sega Genesis
- Cartridge, Sonic 3D Blast for Sega Genesis
- Cartridge, Metriod for Nintendo
- Cartridge, Hudson's Adventure Island for Nintendo
- Cartridge, Super Mario 3 Bros. for Nintendo
- Cartridge, Super Mario 2 Bros for Nintendo
- Cartridge, Super Mario Bros & Duck Hunt for Nintendo
- Cartridge, Back to Future for Nintendo
- Cartridge, The Legend of Zelda for Nintendo
- Cartridge, Castlevania for Nintendo
- Cartridge, Mario Bros for Nintendo
- Cartridge, Dragon Power for Nintendo
- Cartridge, Super Mario Bros & Duck Hunt for Nintendo
- Cartridge, Zelda II - The Adventure of Link for Nintendo
- Cartridge, The Lost Vikings for Sega Genesis
- Cartridge, Earthworm Jim for Sega Genesis
- Cartridge, Chuck Rock for Sega Genesis
- Cartridge, Eternal Champions for Sega Genesis
- Cartridge, Ghouls 'n Ghosts for Sega Genesis
- Cartridge, Super Street Fighter II for Sega Genesis
- CD, Lunar Silver Star Story Complete (missing three CDs)
- CD Box, Night Trap, Sega CD 32X
- CD Case, Sonic 3D Blast for Sega Saturn
- CD Case, Panzer Dragoon for Sega Saturn
- CD Case, Sonic Adventure for Sega Dreamcast
- CD Case, Dance, Dance and Revolution for Playstation
- CD Case, Sonic Adventure 2 for Sega Dreamcast
- CD Case, Nights into Dreams ... for Sega Dreamcast
- Music CD, Sonic, the Hedgehog, 10th Anniversary

Advertising

The original idea for the archive to collect new material was to accept donations. We originally believed that we might even be able to avoid purchasing most items, since the bulk of our collection would come from outside sources. We advertised around campus, in hope that a large number of people would view our ads and have games and paraphernalia that would be willing to part with. Upon completion, the donations would be assembled as a whole, giving us a direction to move in when the archive starts to purchasing games, as there would only be holes to fill, instead of an entire collection.

Creating advertisement material

Our focus was that people would be most likely donating older items, for example, boxes of cartridges from an Atari 2600 system sitting in the attic. This works in our favor since we prefer to have older material provided to us, never mind the fact that newer games could simply be purchased. The older games are no longer in production and much more difficult to locate. In the end, our advertising emphasized - although we accept any and all materials, we are very interested in older game systems and games. This advertisement also had graphics that would be recognized by the larger portion of the gaming public, allowing the advertisements to look friendlier and welcoming to the viewer.

Flyer

We posted fliers around campus in the hopes that they would be viewed by a large number of people on a daily basis. (see Appendix D). Each of the campus buildings has an information board in it for upcoming events on campus and various advertising. We went ahead and posted smaller fliers on these bulletin boards, including a large sized poster copy made for the campus center billboard since the campus center receives more traffic than the other building on campus. The student activities office in the campus center also allows students to post approved fliers on their boards in the campus center.

Costs/Distribution

The single large copy of the flier for the campus center cost six dollars, where all of the smaller fliers posted up in campus buildings and dormitories cost twenty-five cents per page. Fifty pages totaled up to a final cost of twelve dollars and fifty cents, with a final total of eighteen dollars and fifty cents. This was a sound investment in our eyes considering that this amount would be significantly less than the estimated cost of the items we would receive after the public started responding to the advertising.

Article

We wrote up a short article to be published in the following run of the campus newspaper, Tech News (Appendix E). The article was very similar to the fliers, with the same emphasis on donations of older games and paraphernalia. It also illustrated the

creation of the archive, and invited the public to visit the video game display already set up in the library in the hopes of drawing more attention and interest to our cause.

Result of Advertising Endeavor

While we did get several responses to the advertising, it was not widespread enough to be considered a complete success. It's true that the cost of advertising was far less than the total value of all of the donated items in response to our advertising; however we had only received a handful of replies after a couple months had passed. Considering the results of the advertising on campus, it was agreed that simply asking the public for donations was not going to generate enough materials for a complete archive, as can be seen in the list of items donated by outside sources (see Appendix F).

We also attempted to contact various companies to see if anyone would send us materials. The following is our response from SquareEnix:

All content of our games is copyright SQUARE ENIX Co., Ltd. We regret to inform you that we do not grant permission to individuals to use any copyrighted content. Because we receive numerous requests, our policy is to decline any use of our copyrights. We currently are not granting permission to any one except our own business partners.

The Private Policy of SQUARE ENIX Co., Ltd./SQUARE ENIX Inc. stating the use of materials, is as follows:

All game materials, including, but not limited to, their design, text, graphics, screen shots, files are copyrighted by SQUARE ENIX Co., Ltd. All rights reserved. Any other use of materials of our games -- including any commercial use, reproduction for purposes other than that noted above, modification, distribution, or republication -- without the prior written permission of SQUARE ENIX is strictly prohibited. No materials of our games may be used on any other product, published, or otherwise performed in public. For any further inquiries regarding copyrights, give our main office line a call at (310) 846-0345 and the receptionist will direct you toward the proper contacts within the company.

However, attempts to contact Editor-in-Chief Jim Zaback from the Wargamer was a success and a professional letter of request was submitted to see what exactly he had to offer us (see Appendix G) We thought that reviewers would be a valuable resource of media since companies constantly hand over games in exchange for the extra media coverage provided by game reviews. It's likely that most of these games would not be in use once the reviewer has done his job, and would be willing donate them to our archive.

Conclusion

What we thought we would accomplish

The Special Games Archive IQP aimed to establish both the archive, and to a larger degree, the process by which the archive would be created and expanded. From the beginning, it was not expected of the project to in any way form a definitive collection, or even the bulk of the collection. While collection was always a major aspect, the major focus instead was on developing the organization and goals of the archive, and to address any related issues that arose. We had planned to split the two IQP groups into two sections, and to begin searching for materials before the end of the IQP.

What we did accomplish

We were able to complete nearly everything that we had envisioned accomplishing. From the point-of-view of organization, we were able to develop a mission statement and scope statement to focus item collection, and to plan methods of public display, despite having been unable to implement them during the project. For this, we built upon and modified the example set by Henry Lowood and Stanford's Stephen M. Cabrinety Collection. In ROM creation, we were able to resolve issues with copyright law, which also helped us to address issues of preservation. We also researched preservation in its own right, and found information on keeping older games from any unnecessary further deterioration. With the plan to back up games and store them on a hard drive, we now have a solution that could potentially solve our data

preservation indefinitely. In the area of collecting, we were in fact able to begin collecting for the IQP, and even obtained some design documents. The advertisements that we made for the collection helped to spread word and we did indeed receive donations as a result of them. Similarly, publicly and privately requesting items for the IQP at the Boston Port-Mortem resulted in some donations, including design documents and many items from Steve Meretzky. While our collection is relatively small, it is nonetheless well underway, and, with less planning required, later IQP groups should be able to expand greatly upon the size of the archive. Not every issue raised in the process of the IQP was carried out to the full extent. However, we very definitely were able to accomplish those goals that we had set out for ourselves in the beginning.

Hopefully, the groundwork we have laid will facilitate future IQP teams in their attempts to grow the collection. Future IQP teams will be able to focus more on collecting, but will also need to establish the terminals to access the library collection. It will also be necessary to continue searching for devices to create legitimate back-ups for games. These devices are difficult to find, and, since the number of types of console back-ups will increase as the collection itself increases, obtaining back-up devices are likely to always be a major component of future IQPs.

Future IQP Suggestions

The following suggestions would make great future IQP projects, based on the current standings of the collection and our needs for the future success of the archives:

- A potential technical IQP could be to make devices that could extract and build ROMs from games for systems whose backup devices are not unavailable or unpractical.
- Maximizing the exposure of the archives so that we could receive nation-wide if not world-wide support.
- Similar to the death of DOS games, find a way to maintain the playability of ROMs in the event that technology affects the playability of these images.

Appendices

Appendix A – List of Notable Items Worth Collecting

Consoles:

- *Atari 2600*
 - *Represents the birth of home consoles*
- *Gameboy Advance (GBA)*
- *Gameboy and Gameboy Color (GB/GBC))*
 - *Introduced as the first successful handheld system that featured cartridges*
- *Microsoft Xbox (XB)*
- *Nintendo 64 (N64)*
- *Nintendo Entertainment System (NES))*
 - *Revived and dominated the game industry in 1985*
- *Sega Dreamcast (DC)*
 - *First successful implementation of online play with a home console*
- *Sega Genesis Series and Upgrade Components*
 - *Rival to Nintendo Entertainment System and its successor, the Super Nintendo System*
- *Sony Playstation (PSX)*
 - *Took control of the market in 1995*
- *Sony Playstation 2 (PS2)*
- *Super Nintendo Entertainment System (SNES)*
 - *Statistically the most popular console ever.*

Games for Atari 2600:

- *Dig Dug*
- *Donkey Kong*
 - *Indirectly introduced the famous character “Mario”*
- *Missile Command*
- *Pacman*
 - *An extremely innovative a popular game that holds water in today’s market.*
- *Pitfall*
- *Pong*
 - *Atari’s leading title, popular in the arcades.*

Games for Game Boy Advance:

- *Wario Ware Inc.*
 - *Featured the concept behind multiple games in one.*

Games for Nintendo 64:

- *Goldeneye 007*
- *Mario Kart 64*
- *Starfox 64*
- *Super Smash Brothers*
 - *Most popular multi-player game in today’s market with seemingly endless replay value*
- *The Legend of Zelda: Ocarina of Time*
 - *First successful translation of the popular Zelda series into 3d.*

Games for Nintendo Entertainment System:

- *Bubble Bobble*
- *Castlevania*
 - *Introduced the beginning workings of an amazing series.*
- *Double Dragon*
- *Final Fantasy I*
 - *Introduced the beginning workings of an amazing series*
- *Galaga*
 - *A perfect arcade translation from a highly addictive but simple game that is still popular today.*
- *Mega Man 1 + 2*
 - *The most innovative and popular of the Mega Man series for the NES console*
- *Metroid*
 - *Indirectly voiced out that not all heroes have to be male with a unique game structure.*
- *Mike Tyson's Punchout!!*
 - *First game to be re-released regarding the famous heavyweights' actions.*
- *Shadowgate*
 - *The beginning of the very popular text-adventures by Kexmo for the NES console*
- *Super Mario Brothers Series*
 - *Popular series based on the 'carpenter' Mario from the original Donkey Kong series that has been in the business for years*
- *Tetris*
 - *Introduced a simple game concept that has been revamped for years since.*
- *The Legend of Zelda*
 - *Popular game that spawned a series of sequels and a major Nintendo trademark.*

Games for Sony Playstation:

- *Crash Bandicoot*
 - *Introduced Sony's mascot to overthrow Nintendo's power*
- *Dance Dance Revolution*
 - *Successful attempt to incorporate exercise and game.*
- *Einhandler*
- *Final Fantasy VII*
 - *Referred to as one of the best RPGs of all time.*
- *Metal Gear Solid*
- *Oddworld*
- *Parappa the Rapper*
 - *First attempt to establish the genre of music games.*
- *Resident Evil*
- *Spyro The Dragon*
- *Tekken 3*
- *Tomb Raider*
 - *Example of the business tactic 'sex sells' with the provocative Lara Croft*

Games for Sega Genesis:

- *Earthworm Jim*
- *Mortal Kombat*
 - *Pushed the limits behind gore in games.*
- *Phantasy Star*
- *Shining Force 1 + 2*
 - *Very popular RPGs for the Sega Genesis.*

- *Sonic the Hedgehog Series*
 - *Rival to Nintendo's Mario, illustrating Sega's advantage, it's processor speed.*
- *Street Fighter 2: Championship Edition*

Games for Sega CD:

- *Lunar 1 + 2*
 - *Magnificent works by Working Designs, a company whose doors are now closed.*

Games for Sega 32X:

- *Knuckles' Chaotix*

Games for Super Nintendo:

- *Breath of Fire*
- *Chrono Trigger*
 - *The most well known RPG of all time.*
- *Final Fantasy VI*
- *Harvest Moon*
 - *Most popular introduction to Sim games.*
- *Secret of Mana*
- *Star Fox*
 - *First successful implementation of true 3d.*
- *Super Mario World*
 - *Classic, all time favorite for all gamers.*

Appendix B – IP and Copyright Laws

Theft of trade secrets and other proprietary information may violate a number of federal criminal statutes in addition to or instead of 18 U.S.C. §§ 1831-1832. Statutes commonly worth considering are:

- Unlawfully accessing a protected computer to obtain information, 18 U.S.C. § 1030(a)(2)
- Wire or mail fraud including the disclosure of information in violation of a confidential or fiduciary relationship, 18 U.S.C. §§ 1341, 1343, 1346
- Misappropriation and interstate transportation of property or goods, 18 U.S.C. §§ 2314-2315.

Prosecutors should consider these other statutes as well as the EEA, 18 U.S.C. §§ 1831-1832. Charging both a violation of the Economic Espionage Act and another statute such as Interstate Transportation of Stolen Property or Wire Fraud arising from the same act or acts does not violate the Double Jeopardy Clause of the Fifth Amendment of the Constitution since "each offense contains an element not contained in the other." *United States v. Dixon*, 509 U.S. 688, 690 (1993) (citing *Blockburger v. United States*, 284 U.S. 299, 304 (1932)).

If prosecutors decide not to pursue a case federally, they should consider referring the case to state authorities for prosecution. Many states have laws that specifically address the theft of information, and even if a state does not have such a law, a defendant may often be successfully prosecuted under a more general theft statute.

Appendix C – IP Proposal

Special Games Collection Archive

As the IQP team group representing the special game archive, we will be conducting a collection session and pursuing copies of various games and consoles for education and historical purposes. To preserve the life of these items and make available in an area of the library, a computer terminal may be set up with images* of these games, acquired from outside sources, to be made available for play. We will only acquire one software copy per item in our possession, and there will be only one terminal for each copy of the game, so as not to breach the fair use policy. Game images will not be distributed over the network. In the event that multiple computers are setup, games will only be playable on one machine at a time per copy. Computers will have emulators of console hardware running to allow these game images to be played.

* Software copies of hardware



Got a Garage Full of Cartridges?

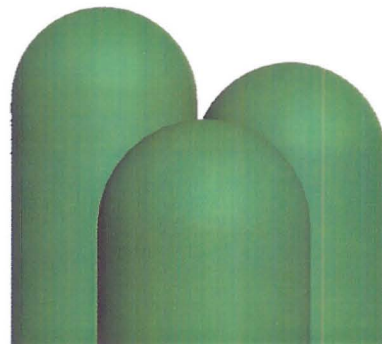
The Gordon Library at
Worcester Polytechnic Institute
is organizing a Video Game Archives
and needs your help!

Donate your
original, functional:

Games
Design Documents
Game Systems
System Accessories
Manuals, Maps, Strategy Guides
Game-Related Posters, Toys, Models, Novels, Cards, etc.

For information on donating,
e-mail:
game-archives@wpi.edu

Office of Special Collections
Gordon Library
100 Institute Road
Worcester, MA 01609



Appendix E – Tech News Article

Tech News Article

Got a garage full of cartridges? Now there's a better place for all of your old video games. Two IQP groups working in A, B and C terms are organizing a Video Games Archive in collaboration with the Special Collections Office of WPI's Gordon Library.

Gordon Library is accepting donations of old games, systems, and related materials both for its artistic merit and for educational purposes, especially for classes in the Interactive Media and Game Development major. However, like other library resources, the games collected will be available for use by the public.

Acceptable donations include, but are not limited to PC and platform games, consoles, controllers, strategy guides, manuals, books, and collectables. Backup copies will not be accepted, and any donated articles must be in good condition and functional.

The IQP teams want the collection to help provide insight into the culture that has formed around gaming, and therefore hope to gather a wide variety of artifacts surrounding the medium. Additionally, as the IQP teams are interested in providing material to analyze and study game development and game design, the teams will be pursuing game developers' design documents—that is, pre-production guides created by the game makers which detail the general outline and game play elements of a game.

If you have any questions or are interested in donating to the Video Games Archive, send an e-mail to game-archives@wpi.edu.

Appendix F – List of Donations

Rick Goodman

Design Documents

- "Artillery Spotter Specification",
 - Version 2.0, by Rick Goodman, October 22, 2002
- "Unit Art Reference Sheet"
 - Hero Achilles, by Rick Goodman, June 7, 2004
- "Unit Art Reference Sheet"
 - Hero Julius Caesar, June 7, 2004
- "Unit Art Reference Sheet"
 - Greek Citizen, by Rick [Goodman], June 25, 2004
- "Wall Scaling Ladder (Generic Length)"
 - Version 2.2, by Rick Goodman, October 6, 2004
- "Design Issues"
 - Version 1.0, by Rick Goodman, October 11, 2004
- "Just in Time Help Text"
 - Version 3.0, by Rick Goodman & Bill Harms,
May 25, 2005
- "AI Issues"
 - June 5, 2005
- "Naval Pathing Build Notes"
 - Version 2.0, June 14, 2005
- "Advisors"
 - August 15, 2005

Steve Meretzky

- (2) CD-Rs w/ design documents for video games:
 - Spellcasing 101
 - Spellcasting 201
 - Spellcasting 301
 - Superhero League of Hoboken

- Hodj 'n' Podj
 - Space Bar
- (4) CD-Rs w/ Hodj' 'n' Podj video game for Windows.
- (4) Copies of Hodj 'n' Podj video game for Apple Macintosh in original boxes.
- (1) Copy of Space Bar video game in original box.
- (1) Copy of Spellcasting - Party Pak video game in original box.
- (1) Copy of Super League of Hoboken video game in original box.

Flo McGarrell

- Video, BetaSP format
 - Video Computer System" by Golden Shower"
 - "Total Control", by Golden Shower
 - "Name of the Game", by Ural 13
 - Diktators; "Upload".

Janna Flannery

- Atari 2600 game system
 - 5 joysticks
 - 2 paddle controllers
- Video Game Cartridges for Atari 2600
 - River Raid, Activision, 1982
 - Star Raiders, Atari, 1982
 - Frogger, Parker Brothers, 1982
 - Missile Command, Atari, 1981
 - Maze Craze, Atari, 1978
 - Cookie Monster Munch, Atari, 1981
 - Big Bird's Egg Catch, Atari, 1983
 - Video Olympics, Atari, 1978
 - Video Chess, Atari, 1979
 - Backgammon, Atari
 - Berzerk, Atari, 1982
 - BurgerTime, Data East, 1982

- Moon Patrol, Atari, 1983
- Surround, Atari, 1978
- Air Sea Battle, Atari, 1981
- Casino, Atari, 1979
- Combat, Atari
- Battlezone, Atari, 1983
- Stampede, Activision, 1981
- Asteroids, Atari, 1981
- Super Challenge Football, M.I., 1982
- Breakout, Atari, 1978
- Chopper Command, Activision, 1982
- Seaquest, Activision, 1983
- Outlaw, Atari, 1978
- Street Racer, Atari, 1978
- Ms. Pac-Man, Atari 1982

Allan Johannesen

- Video games for Sega Genesis
 - WorldCup USA 94
 - Altered Beast
 - Air Diver
 - John Madden Football '93
 - RoadBlasters
 - Road Rash 3
 - Tommy Lasorda Baseball
 - General Chaos
 - Contra Hard Corps
 - Super Hang-On
 - Road Rash II
 - Road Rash

- Video games & programs for Sega Dreamcast
 - Ready 2 Rumble Boxing 2
 - Demolition Racer No Exit (Demo)
 - Spec Ops II Omega Squad
 - Generator: Playable Bits and Video Clips, Vol. 1
 - Iron Aces
 - Monaco Grand Prix
 - Vigilante 8: Second Offense
 - Chicken Run
 - Hidden & Dangerous
 - Soul Calibur
 - Crazy Taxi
 - Web Browser
 - Suzuki Alstare Extreme Racing
 - Wild Metal
- Sega Genesis game system w/ controllers
- Sega Dreamcast game system w/ controllers

Robert Lindeman

- Video game, Space Quest IV, Roger Wilco, for IBM, Tandy and MS-Dos systems.
- Video game, X-Wing vs. Tie Fighter, Windows 95.
- Video game, Outlaws, Windows 85.
- Video game, Spectrum HoloByte, IBM PC.
- Video game, Loderunner (5 diskettes).
- Video game, Microsoft Entertainment Pack, Volume Two (2 diskettes).
- Video game, Microsoft Return to Arcade (3 diskettes).

Josh Brandt (Partial List)

- Black T-Shirt, Bungie from Mac World 1997
- Black T-Shirt, Marathon Man, Bungie from Mac World
- Electronic Game & Box, Marathon Trilogy, 1997

Appendix G – Letter to Jim Zabeck



University Archives & Special Collections
George C. Gordon Library

February 22, 2006

Dear Jim,

In 2005, the WPI Archives & Special Collections in cooperation with WPI's Interactive Media and Game Design (IMGD) faculty established the **History of Video Game Archives**. The archives will be one of the few existence dedicated to preserving the history of video games and their design. WPI intends to make the collection available as a resource for students and scholars interested in studying the technological and design developments in video games as well as the social and historical impact on popular culture. The archives will serve moreover as a teaching resource for IMGD faculty and students.

Below is a list of things we are seeking to acquire:

- Design documents (e.g. materials that document the game design process)
- Hardware (PC and game consoles)
- Software (PC and game consoles)
- Manuals & Guides
- Books & Magazines
- Memorabilia & Collectibles (e.g. mouse pads, t-shirts, hats)

At present, we have collected over 500 items -- covering the items listed above and dating from the 1970s to the present. The collection also includes design documents from noted game designers Steve Meretzky and Rick Goodman.

We hope you can help us add to the collection. Feel free to contact me at game-archives@wpi.edu or 508-831-6612. I look forward to hearing from you.

Sincerely,

Rodney Gorme Obien
Curator of Special Collections
Worcester Polytechnic Institute

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Intellectual Property Crimes: VIII. Theft of Commercial Trade Secrets. April 23, 2001.

U.S. Government. March, 2006

<<http://www.cybercrime.gov/ipmanual/08ipma.htm>>

SM Cabrieny Biography [sic]. Stanford University. March, 2006

<<http://www-sul.stanford.edu/depts/hasrg/histsci/SMCbiography.htm>>.

Webb, Rob. *Rob Webb - Gameboy Xchanger - Sega Saturn - SNES - Bung – Modchip*

www.robwebb.clara.co.uk/shop. Family Game. March, 2006

< <http://www.robwebb.clara.co.uk/shop/index.htm>>.

Wizard of OS: Henry Lowood. Wizards of OS. March, 2006

<<http://wizards-of-os.org/index.php?id=840>>.